

7.0 AVOIDANCE, MINIMIZATION AND COMPENSATORY MITIGATION

The National Environmental Policy Act (NEPA) of 1969 requires the disclosure of adverse environmental impacts and the consideration of mitigation measures for “any adverse environmental effects, which cannot be avoided” [Section 102(2)(C)]. The Council on Environmental Quality (CEQ) regulations that implement NEPA requires the disclosure of mitigation measures in impact statements [40 CFR Sections 1502.14(f) and 1502.16(h)]. The Clean Water Act Section 404(b)(1) Guidelines (40 CFR, Part 230), U.S. Army Corps of Engineers (USACE) Regulations (33 CFR Part 332), and associated guidance as well as the *Project Development and Environment (PD&E) Manual* (Part 2, Chapter 18) require that project effects to waters of the United States, including wetlands, be addressed through a sequence of avoidance, minimization, and then compensation for unavoidable impacts.

The avoidance and minimization process has been documented in Section 3.0 (Alternatives Including Proposed Action) and has been summarized in Section 7.1 (Avoidance) and Section 7.2 (Minimization). Compensatory mitigation measures are discussed for those categories where potential impacts have been identified (noise, Section 4(f) resources, visual, relocations, and natural habitats). The sequenced approach to compensatory mitigation is discussed in this section.

7.1 Avoidance

All appropriate and practicable steps have been taken to avoid impacts through a detailed evaluation of numerous alternatives, including the Preferred Alternative. The alternatives evaluation and associated screening have been discussed in Section 3.0 (Alternatives Including Proposed Action). Many of the alternatives evaluated were recommended during the Efficient Transportation Decision Making (ETDM) Programming Screen. As a result of early coordination with the Environmental Technical Advisory Team (ETAT), the avoidance alternative evaluation has been completed and documented in the reports *Analysis of Potential River Crossing Corridors (Corridor Report; June 2008)* and the *Crosstown Parkway Corridor Extension Alternatives Report (Alternatives Report; June 2008)*. These reports document the need for the project and the process used to identify alternatives that address the project purpose and need. These reports were reviewed by the ETAT and included the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (USEPA), the USACE, the U.S. National Marine Fisheries Service (NMFS), the U.S. Coast Guard (USCG), and state agencies via the ETDM public access website.¹ The *Corridor Report* and the *Alternatives Report*, which were accepted by the Federal Highway Administration (FHWA) in March 2009, are discussed in detail in Section 3.0 (Alternatives Including Proposed Action).

¹ These reports are available on the ETDM website: <http://etdmpub.flh-etat.org/est> and search under Project #8247.

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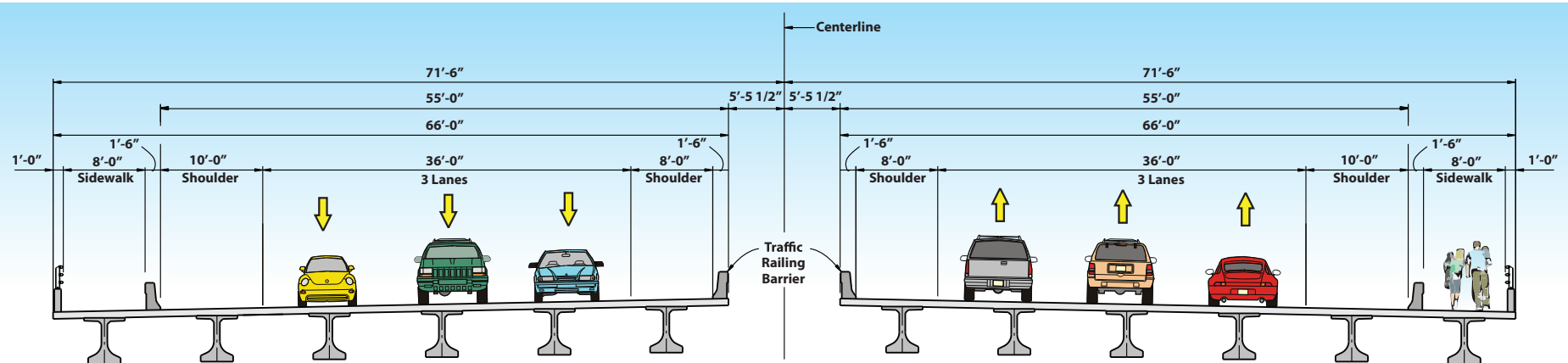
The *Alternatives Report* documented the purpose and need for the project and examined means to avoid and minimize impacts to the natural habitats associated with the North Fork St. Lucie River (NFSLR). The *Alternatives Report* Level 1 screening evaluated eight build alternatives and eliminated the southernmost alternatives (Alternatives 3 and 4) because they did not meet the purpose and need for the project. The *Alternatives Report* Level 2 screening evaluated the remaining six build alternatives (the same six alternatives that are evaluated in this EIS). The Level 2 screening criteria were developed to ensure that agency and public issues were considered fully and to focus more definitively on performance in terms of traffic capacity and traffic relief to the bridges at Prima Vista Boulevard and Port St. Lucie Boulevard. The screening examined natural resource impacts, social impacts, community impacts, potential Section 4(f) impacts, and an evaluation as to how the alternatives met the project purpose and need. The results of the Level 2 Screening indicated that the six build alternatives varied in their effectiveness in terms of meeting the project purpose and need and the other evaluation criteria. FHWA determined, upon its acceptance of the *Alternatives Report* that, due to the sensitive social and environmental character of the project area and to ensure a comprehensive comparison and evaluation of alternatives, all six alternatives would be carried forward as potential viable alternatives.²

Avoidance alternatives evaluated during the EIS process are described in Section 3.0 (Alternatives Including Proposed Action) and Section 6.0 (Section 4(f) Evaluation). Among them, a tunnel alternative, various bridge types, and variations of the alternative to widen the existing Port St. Lucie Boulevard and Prima Vista Boulevard bridges were examined. These avoidance strategies were either not feasible (double-decking the existing bridges), did not meet the purpose and need for the project (e.g., widening the existing bridges, Multimodal Alternative, flyover ramps at Port St. Lucie Blvd and U.S. 1), caused additional substantial impacts (cable-stayed bridge), or did not avoid the natural resources for which they were intended (tunnel, widening the existing bridges). Ultimately, only the six build alternatives (from the *Alternatives Report*) remained for further evaluation. After a thorough assessment of the data and analysis of the alternatives, extensive agency coordination, the project Public Hearing, and full consideration of all comments, Alternative 1C is the Preferred Alternative. Further, the most viable bridging option is a bridge constructed with a pile bent substructure. A compensatory mitigation plan was developed to compensate for unavoidable impacts.

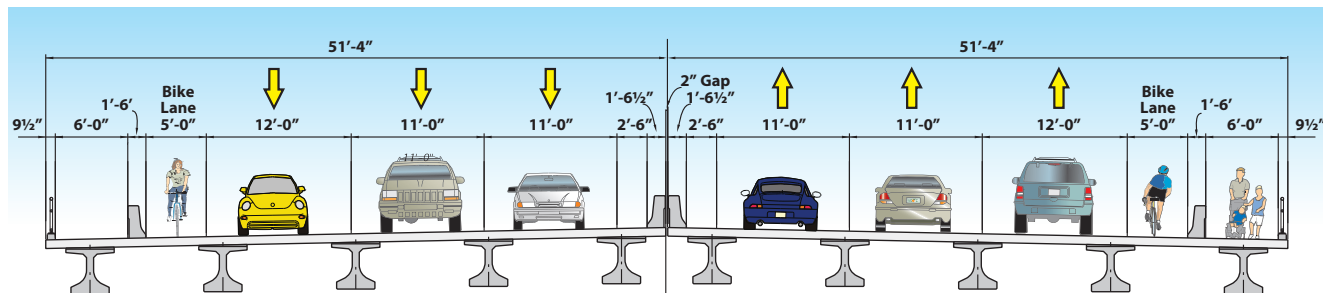
7.1.1 Additional Avoidance and Minimization Measures for the Preferred Alternative

Following the selection of the Preferred Alternative [the alternative selection process is described in Section 3.3.1 (Selection of the Preferred Alternative)], additional avoidance and minimization measures were developed through coordination with NMFS, USACE, and USFWS (July to September 2012) to reduce the impacts of the Preferred Alternative to wetlands, listed species habitats, and essential fish habitat. Specifically, the bridge typical section was reduced from 143 feet to 103 feet, consisting of twin structures, each consisting of two 11-foot travel lanes, one 12-foot outside travel lane, a 5-foot outside shoulder/bicycle lane, a 2-foot 6-inch inside shoulder, a 1-foot 6 ½-inch inside traffic barrier, a 1-foot 6-inch outside traffic barrier between the sidewalk and outside shoulder/bicycle lane, a 6-foot sidewalk, a 9 ½-inch pedestrian railing, and a 2-inch gap between the structures (**Figure 7.1**).

² FHWA letter to James A. Wolfe, P.E., FDOT District 4, dated December 10, 2007 (**Appendix A**).



ORIGINAL TYPICAL BRIDGE SECTION
OVER NORTH FORK ST. LUCIE RIVER
MAIN CHANNEL SPAN



FINAL REDUCED BRIDGE TYPICAL SECTION
OVER NORTH FORK ST. LUCIE RIVER
MAIN CHANNEL SPAN

Note: After selection of the Preferred Alternative (Alternative 1C), coordination continued with NMFS, USFWS and USACE to further reduce impacts associated with the bridge. Through this coordination effort, the bridge typical section for the Preferred Alternative was reduced to approximately 103 feet.

By reducing the bridge typical sections from 143 feet to 103 feet and by assessing shading impacts based on the physical width of the bridge, as opposed to the 157-foot right of way width, wetland impacts were reduced from 10.1 acres to 6.83 acres, a reduction of 3.27 acres (**Table 7.1**). The reduced typical section also resulted in a reduction in wetland functional loss from 11.26 to 8.34 functional loss units (includes direct and indirect impacts), a reduction of 2.92 functional loss units (the indirect functional losses were calculated from the edge of the bridge, rather than from the right of way line). Upland impacts were reduced from 6.45 acres to 2.96 acres, a reduction of 3.49 acres of impact.³

Table 7.1 Comparison of the acres of impact due to the Preferred Alternative with a 157-foot right of way and the Preferred Alternative with a reduced 103-foot bridge width

Habitat Type	Preferred Alternative (DEIS) with 157-foot right of way area of impact (acres)			Preferred Alternative with Reduced Bridge 103-foot Bridge Width (acres)		
	Direct Impact (Fill)	Direct Impact (Shading)	Total	Direct Impact (Fill)	Direct Impact (Shading)	Total
Wetlands	0.83	9.36	10.10	0.70	6.13	6.83
Water Column	0.01	1.74	1.75	0.01	1.14	1.15
Uplands	3.84	2.61	6.45	1.32	1.64	2.96

Despite these efforts, the Preferred Alternative will result in unavoidable wetland and associated upland impacts (direct, indirect, and temporary) and will require compensatory mitigation:

- Wetlands – unavoidable impacts remain for 8.34 functional loss units (includes direct and indirect impacts) for the Preferred Alternative. These include losses to Mangrove Swamps; Stream and Lake Swamps; Mixed Wetland Hardwoods; Freshwater Marsh; and Freshwater Marsh with Shrubs, Brush, and Vines. Functional losses for direct and indirect impacts were calculated by UMAM using scores determined by an interagency team made up of representatives from the USACE, USEPA, NMFS, South Florida Water Management District (SFWMD), and Florida Department of Environmental Protection (FDEP).
- Uplands – unavoidable impacts will remain for 2.96 acres of upland habitats. These include losses to Pine Flatwoods and Live Oak.
- Listed species habitats - unavoidable impacts remain for potential habitat losses for the eastern indigo snake, wood stork, West Indian manatee, and smalltooth sawfish. These species are expected to occur in Mangrove Swamps (smalltooth sawfish); Pine Flatwoods (eastern indigo snake); Freshwater Marsh, and Freshwater Marsh with Shrubs, Brush and Vines (wood stork); and the Estuarine Water Column (West Indian manatee and smalltooth sawfish). A Determination of Effects has been made for each listed species. The Preferred Alternative “May Affect, but Not Likely to Adversely Affect” each of these four species. The project will have “No Effect” on the remaining evaluated species. Through informal Section 7 Consultation under the Endangered Species Act, the USFWS and NMFS have concurred with these findings (**Appendix A**).^{4,5}

³ As the impervious area on the bridge was reduced, stormwater control requirements also decreased. An assessment of the stormwater runoff calculations determined that the stormwater pond on the Liberty Medical property has sufficient capacity to accommodate the additional runoff from the bridge and does not require expansion. This resulted in a reduction of upland habitat impacts (2.47 acres).

⁴ Concurrence letter from USFWS regarding eastern indigo snake, wood stork, and the West Indian manatee, dated October 15, 2012 (**Appendix A**).

⁵ Concurrence letter from NMFS regarding smalltooth sawfish, dated January 4, 2013 (**Appendix A**).

- Section 4(f) resources - a use of Section 4(f) properties will occur for all build alternatives, including the Preferred Alternative.⁶ The Preferred Alternative will involve the use of 0.02 acres in the AP and 2.14 acres in the SPSP.
- Sovereignty Submerged Lands (SSL) – unavoidable impacts will remain for 1.74 acres of SSL for the Preferred Alternative, primarily due to shading effects.
- Essential Fish Habitat – unavoidable impacts remain for 8.34 functional loss units (includes direct and indirect impacts) for the Preferred Alternative (same as wetlands) plus the unavoidable impacts for SSL (1.74 acres; UMAM does not assess open water habitats for functional loss). These include losses to the Estuarine Subtidal Water Column (same as SSL), Estuarine Intertidal Scrub Shrub (same as Mangrove Swamps), and Palustrine Emergent and Forested Wetlands (same as Stream and Lake Swamps; Mixed Wetland Hardwoods; Freshwater Marsh; and Freshwater Marsh with Shrubs, Brush and Vines).
- Recreational Resources – unavoidable impacts occur at the Halpatiokee Canoe and Nature Trail for the Preferred Alternative. Alignment shifts were examined to avoid the Halpatiokee facility but were rejected because of additional substantial wetland and floodplain impacts [Section 6.3.2.3 (Measures to Minimize Harm for Alternative 1C)].
- Water quality – the stormwater management system will be designed to prevent water quality degradation; however, water quality impacts are still possible, but are considered to be negligible.

7.2 Minimization

7.2.1 *Natural Environment*

All appropriate and practicable steps have been taken to minimize impacts resulting from the Preferred Alternative, including direct, indirect, and temporary construction impacts. An extensive process of coordination (since 2003) with City of Port St. Lucie (City), St. Lucie County (County), state, and federal agencies has resulted in a number of minimization strategies that have been incorporated into the concept plans developed for all build alternatives, including the Preferred Alternative. These minimization measures have been reiterated as project commitments for the Preferred Alternative.

For all build alternatives, including the Preferred Alternative, the widths of roadway cross sections were reduced over natural habitats. The 330-foot suburban cross section west of the NFSLR was reduced to a 143-foot bridge cross section over the AP and the SPSP. Through continued coordination with the cooperating agencies, the width of the bridge cross section was further reduced to 103 feet over the AP and the SPSP.

- The City has committed to a top down construction method, or construction methods from temporary platforms, trestles, or other similar methods, to avoid and minimize potential impacts to environmentally-sensitive resources. This can be accomplished by using the previously constructed portion of the permanent bridge as a work platform (top down) or by using a free-standing temporary work platform alongside the bridge (within the right of way or bridge footprint) to construct the next adjacent span ("trestle") without placement of equipment or personnel on the ground.⁷ These construction techniques avoid (or minimize) the use of ground-based equipment. Conventional

⁶ Section 6.6 (Evaluation of Alternatives) – Section 4(f) Evaluation.

⁷ The trestle method is assumed in the EIS to provide a conservative estimate of potential impacts. If a top down or gantry method is used, construction impacts will be less than the trestle method.

construction methods or partial top down bridge construction methods usually involve equipment, personnel, or materials on the ground and ground-based construction methods have been eliminated from consideration. No haul roads within the bridge easement will be used.

- Contractors will be selected based on their experience in top down construction method, or construction methods from temporary platform, trestles, or other similar methods for environmentally-sensitive areas.
- The top down construction method, or construction methods from temporary platform, trestles, or other similar methods will use driven precast concrete pile-supported bent foundations (versus drilled or other types of excavated foundations) to reduce benthic impacts within the NFSLR. Drilled shaft and spread footing foundations typically require ground-based construction equipment. No water jetting will be allowed.
- Bridge piers located in the water will be oriented to avoid restriction of water movement and to maximize the NFSLR hydraulic section.
- Stormwater management systems (ponds) have been located within the right of way or within already developed areas to avoid additional impacts to wetlands or other sensitive habitats.
- Retaining walls and/or MSE walls will be used to minimize the amount of right of way needed; sloped bridge approaches will not be used.
- Strict adherence to state and regional regulatory criteria pertinent to stormwater treatment and water quality will avoid impacts to the NFSLR, as detailed in the Water Quality Impact Evaluation (WQIE) and WQIE checklist.
- Scuppers⁸ will not be used. All stormwater runoff will be directed to a drainpipe mounted below the bridge, which will convey runoff to the stormwater management system.
- The concept plans have been developed to locate bridge abutments to the maximum extent practicable outside of natural wetland and upland habitats to minimize fill impacts.
- The project area is located within the 100-year floodplain as identified on the Federal Emergency Management Agency Flood Insurance Rate Maps for St. Lucie County. As detailed in the *Location Hydraulic Report*, the concept plans for all build alternatives, including the Preferred Alternative, were developed to have minimal impacts on floodplains.
- Concepts plans were developed with a low-level bridge that meets the minimum-required bridge height (per USCG clearance requirements) to minimize visual impacts of the permanent structure.
- Contractors will use noise attenuation techniques during in-water construction (e.g. bubble curtains⁹).
- To minimize the impacts of drilling rigs, specialized equipment, such as, rubber tire mounted equipment, amphibious track rigs, rigs mounted on all-terrain vehicles, and tripod drill rigs, will be used during geotechnical/soil investigations in sensitive habitats.
- Specialized lighting fixtures will be used to direct light onto the pavement (rather than lighting mounted on poles) to reduce light trespass into natural habitats and surrounding areas to the maximum extent practicable.
- Turbidity control devices will be used, such as turbidity curtains or temporary steel casing during construction activities in the water.

⁸ Scuppers are openings at the edge of the bridge deck to allow water to drain directly into the receiving waters.

⁹ A confined bubble curtain is a circular- or square-shaped device made of rubber, plastic, or steel tubing that is placed completely around a pile and extends to the bottom of the water column. The bubbles produced within the curtain absorb the generated sound wave and limit its dissipation. An unconfined bubble curtain can also be used (bubbles only) if currents do not carry the bubbles downstream.

- On the east side of the NFSLR, construction staging and construction site access areas will be limited to the footprint of the bridge approach roadway.
- The Florida Department of Transportation (FDOT) *Standard Specifications for Road and Bridge Construction*, which contains numerous techniques and specifications, will be implemented to minimize impacts to natural habitats, residential neighborhoods, and businesses during construction.

Based on these additional avoidance and minimization measures, the Preferred Alternative has avoided and minimized impacts to the maximum extent practicable, as required by the Section 404(b)(1) Guidelines.¹⁰ During the permitting phase of the Preferred Alternative, the permit application package will include detailed construction plans, design details, and a further analysis of the alternatives (as required by the Section 404(b)(1) Guidelines). The USACE has stated that the criteria used to evaluate the range of alternatives in the EIS included evaluation factors relevant to the 404(b)(1) Guidelines and will be further evaluated during the permitting phase.¹¹

7.2.2 Social Environment

Each of the build alternatives avoids or minimizes impacts to the natural and/or the social environment to varying degrees. Alternatives 2A, 2D, 1C, and 1F were developed primarily along existing routes to minimize: impacts to neighborhood cohesion; noise impacts; and visual impacts within the community. Alternatives 2A, 2D, 1F, 6B, and 6A avoid impacts to the Halpatiokee Canoe and Nature Trail in the SPSP. Alternatives 2A, 2D, and 1C avoid impacts to La Buona Vita east of the NFSLR, a cooperative community of residents over the age of 55.

In addition, coordination with the local law enforcement and Floresta Elementary School was conducted to identify issues or concerns with the proposed alternatives. The project was reviewed to introduce as many U-turn opportunities as practical at the request of the police department, and the need to provide school crossing guards at the Crosstown Parkway Extension and Floresta Drive intersection was indicated by the school board. Within and among alternatives various measures were taken to improve conditions or to minimize impacts upon the community. These are summarized below.

7.2.2.1 All Build Alternatives

- Provide a signal at the major intersection of Floresta Drive to improve traffic safety;
- Provide signalized pedestrian control at the major intersection of Floresta Drive to minimize impacts to pedestrian safety;
- Provide buffered shared-use pathways along the project to improve pedestrian safety and to facilitate better pedestrian mobility where currently no facilities exist;
- Provide designated bicycle lanes along the project to improve bicycle safety;
- Provide cul-de-sacs when appropriate to facilitate vehicle turnaround within the neighborhoods and minimize impacts resulting from new dead end roadways;
- Realign the neighborhood street network, when possible, to connect dead end streets to minimize cohesion impacts within the neighborhoods;

¹⁰ Under the Section 404(b)(1) guidelines, no discharge of dredged or fill material can be permitted if there is a practicable alternative to the proposed discharge, which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences [Source: 40 CFR Part 230.10(a)].

¹¹ Email from USACE, dated December 21, 2012 (**Appendix A**).

- Consider sidewalk connections to dead end roadways to improve pedestrian access to the new shared-use pathways;
- Identify feasible and reasonable noise barriers to mitigate noise impacts within the community, and coordinate with the neighborhoods regarding the ultimate placement of the barriers; and
- Identify opportunities to enhance the community by incorporating input on project design elements associated with the design of lighting and visual aspects of the bridge, and landscaping for the project. The City will elicit additional input from the public during one or more Council meetings.

7.2.2.2 Alternative 2A

- Provides three cul-de-sacs and connects four streets through realignments;
- Provides a new full access connection into the neighborhood east of the NFSLR along the north side to mitigate for the loss of left-turn access into and out of the neighborhood where a median is proposed on the approach to U.S. 1; and
- Provides a U-turn opportunity between Manth Lane and Floresta Drive to mitigate for the loss of the northbound left turn at Manth Lane, and to provide westbound drivers an additional turn opportunity after Floresta Drive, if necessary.

7.2.2.3 Alternative 2D

- Provides four cul-de-sacs and connects eight streets through realignments to minimize impacts to cohesion and mobility in the neighborhood;
- Provides a new full access connection into the neighborhood east of the NFSLR along the north side to mitigate for the loss of left-turn access into and out of the neighborhood where a median is proposed on the approach to U.S. 1;
- Provides a U-turn opportunity between Manth Lane and Floresta Drive to mitigate for loss of the northbound left turn at Manth Lane and loss of left-turn access at Preston Lane;
- Provides a break in the proposed median along Floresta Drive (south of Crosstown Parkway Extension/Walters Terrace) to minimize impacts to Floresta Elementary School access and the neighborhood access on the west side of Floresta Drive (south of Walters Terrace);
- Reduces the right of way width along Floresta Drive to minimize impacts to Kiwanis Park; and
- Includes a street connection to Autumn Terrace to minimize access impacts to Kiwanis Park from Floresta Drive and to minimize access impacts to the neighborhood on the west side of Floresta Drive (between the west and east legs of the Crosstown Parkway Extension alignment).

7.2.2.4 Alternative 1C (Preferred Alternative)

- Provides one cul-de-sac and connects three streets through realignments to minimize impacts to cohesion and mobility in the neighborhood;
- Provides a U-turn opportunity between Manth Lane and Floresta Drive to mitigate for loss of the northbound left turn at Manth Lane and loss of left-turn egress from the neighborhoods at Preston Lane;
- Extends the west end of the bridge so that it passes over Coral Reef Street to minimize impacts to cohesion and mobility within the neighborhood; and
- Uses an existing roadway alignment to minimize the number of residential impacts on the west side of the NFSLR.

7.2.2.5 Alternative 1F

- Provides one cul-de-sac and connects three streets through realignments to minimize impacts to cohesion and mobility in the neighborhood;
- Provides a U-turn opportunity between Manth Lane and Floresta Drive to mitigate for loss of the northbound left turn at Manth Lane and loss of left-turn egress from the neighborhoods at Preston Lane;
- Extends the west end of the bridge so that it passes over Coral Reef Street to minimize impacts to cohesion and mobility within the neighborhood;
- Uses primarily existing roadway alignment west of the NFSLR to minimize the number of residential impacts on the west side of the NFSLR; and
- Shifts the alignment east of the NFSLR to the south to reduce residential relocations in La Buona Vita and business relocations along U.S. 1 (ultimately, relocations could not be avoided within La Buona Vita).

7.2.2.6 Alternative 6B

- Provides three cul-de-sacs and connects three streets through realignments to minimize impacts to cohesion and mobility in the neighborhood;
- Provides a U-turn opportunity between Manth Lane and Floresta Drive to mitigate for loss of the northbound left turn at Manth Lane and loss of left-turn egress from the neighborhoods at Preston Lane;
- Extends the west end of the bridge so that it passes over Coral Reef Street to minimize impacts to cohesion and mobility with in the neighborhood; and
- Shifts the alignment east of the NFSLR to the south to reduce residential relocations in La Buona Vita and business relocations along U.S. 1 (ultimately, relocations could not be avoided within La Buona Vita).

7.2.2.7 Alternative 6A

- Provides two cul-de-sacs and connects seven streets through realignments to minimize impacts to cohesion and mobility in the neighborhood;
- Provides a U-turn opportunity between Manth Lane and Floresta Drive to mitigate for loss of the northbound left turn at Manth Lane and loss of left-turn egress from the neighborhoods at Preston Lane;
- Shifts the alignment north across the NFSLR to avoid impacts to a community water treatment plant and to minimize impacts to residents within La Buona Vita; and
- Provides a new access into La Buona Vita to mitigate for the elimination of the existing entrance on U.S. 1 (where the proposed alignment would be located).

7.3 Compensatory Mitigation for Unavoidable Impacts

NEPA requires that the EIS discuss “any adverse environmental effects, which cannot be avoided” [Section 102(2)(C)]. The CEQ regulations implement this requirement by requiring a discussion of mitigation measures [40 CFR Sections 1502.14(f) and 1502.16(h)]. Several mitigation options have been developed in coordination with City officials, the FDOT, the FHWA, regulatory agencies, and managers of publicly-owned properties and are described in this section.

7.3.1 *Noise*

A noise barrier analysis concluded that noise abatement is feasible and reasonable for the Preferred Alternative and locations for noise barriers have been proposed. To mitigate for noise impacts, noise abatement measures will be implemented at noise impacted locations contingent upon the following:

- Subsequent to any significant design changes, the noise analysis conducted during final design continues to support the need, feasibility, and reasonableness for providing abatement;
- Community input during the design phase supporting the types, height and locations of the noise barriers is provided to the District office; and
- An assessment of the impact of noise barriers on billboards that may be affected has been made and no billboards were found to be blocked by noise barriers. A final determination of impacted billboards will be made based on the final design vertical and horizontal alignments. Public involvement related to billboards will occur in accordance with Section 479.25, F.S.

Public input and agency coordination during the design phase, as identified in this section, are project commitments [Section 9.0 (Commitments and Recommendations)].

7.3.2 *Visual*

Under all build alternatives, including the Preferred Alternative, unavoidable visual impacts will occur, as discussed in Section 5.3.2 (Visual and Aesthetic). Existing residences along the Preferred Alternative will be acquired west of the NFSLR but no residences or businesses are located at the eastern terminus. A low-level bridge that meets the minimum-required bridge height (per USCG clearance requirements) will minimize visual impacts of the bridge structure. The City will elicit input from the community during one or more City Council meetings to identify opportunities to enhance the community by incorporating input on project design elements associated with the design of lighting and visual aspects of the bridge, and landscaping for the project. This is a project commitment and is included in Section 9.0 (Commitments and Recommendations).

7.3.3 *Section 4(f) Resources*

The No Build Alternative would avoid the use of all three Section 4(f) properties within the project area: the AP, the SPSP, and Kiwanis Park. Only Alternative 2D uses Kiwanis Park; all other build alternatives avoid this park. Alternative 6A avoids the use of the SPSP because this alternative is located north of the boundaries of the SPSP; all other build alternatives, including the Preferred Alternative, use the SPSP. However, as documented in Section 6.2.3 (Evaluation of Avoidance Alternatives for Savannas Preserve State Park) and Section 6.6.1 (Comparison of Alternatives Regarding Least Harm Analysis), Alternative 6A has an accumulation of collective adverse socio-economic impacts. Thus, it was determined to be an

imprudent avoidance alternative for the SPSP in terms of Section 4(f). All build alternatives, including the Preferred Alternative, would use the AP. As described in Section 7.2 (Minimization), the City has committed to a top down construction method or construction methods from temporary platforms, trestles, or other similar methods to minimize the use of Section 4(f) properties.

Coordination has been ongoing with the Florida Department of Environmental Protection (FDEP), the agency with management authority over the AP and the SPSP, to address the use of these properties and to develop a compensatory mitigation plan for the use of state-owned lands. This resulted in the development of a Proprietary¹² Mitigation Plan, which provides compensatory mitigation for obtaining an easement to cross state-owned lands. A Regulatory Mitigation Plan was also developed for the project and is described in the next section. Details of the Proprietary Mitigation Plan are contained in Section 6.7 (Compensatory Mitigation for Section 4(f) Uses) and are summarized in this section. Concept plans¹³ of each mitigation project are contained in **Appendix M**. The Regulatory Mitigation Plan and the Proprietary Mitigation Plan also provide ecological benefits to state-owned lands and the features that qualify them as Section 4(f) properties.

The City coordinated with the FDEP and proposed to complete some of the projects listed in the North Fork St. Lucie River Aquatic Preserve Management Plan (2009) as compensatory mitigation for crossing state-owned lands. On April 26, 2010, the City entered into a Memorandum of Understanding (MOU) with the FDEP. The MOU states that the City will provide a Proprietary Mitigation Plan in exchange for an easement to cross the NFSLR. This MOU is valid for all build alternatives, including the Preferred Alternative.

The Proprietary Mitigation Plan includes four water quality improvement projects within the NFSLR floodplain, 108.55 acres of City-owned lands that will be conveyed to the State of Florida, and improvements to the Halpatiokee Canoe and Nature Trail and the Savannas Recreation Area, and to the Savannas Preserve Education Center. The Acquisition and Restoration Committee has recommended approval to grant the easement (16.1 acres) across state-owned lands, which will be valid for the Preferred Alternative. Once the Proprietary Mitigation Plan projects are constructed, the Board of Trustees will convey the easement to cross state lands to the City. All proprietary mitigation projects will be constructed after the Record of Decision is approved, with completion dates in 2014. Once the Record of Decision is approved, the acquired lands will be conveyed to the state. At the completion of the Proprietary Mitigation Plan:

- State ownership of lands within the SPSP will increase by 108.55 acres over existing conditions.
- The easement will authorize the bridge crossing over 960 linear feet of shoreline (160 feet along each shoreline pair for three crossings for the Preferred Alternative); the acquired lands will increase the linear feet of shoreline under state ownership by 12,645 feet, or a net increase of 11,685 feet.
- Three improved recreational/educational projects will be completed within the SPSP.
- Four water quality improvement projects will restore or improve historic river flows and will improve an estimated 22.16 acres of open water and will reconnect an estimated 28.05 acres of degraded floodplain wetlands to flows from the NFSLR.¹⁴ These projects will also increase the feeding, breeding, and nursery habitat for fish within the NFSLR.

¹² "Proprietary" refers to publicly-owned lands. These lands are held in trust by the State of Florida for all residents and are intended to be managed for the public benefit.

¹³ Programming Document for Water Quality Improvement Projects, June 2011 (**Appendix M**).

¹⁴ Source: NFSLR Aquatic Preserve Management Plan (2009).

- The water quality improvement projects will improve 255 feet of NFSLR shoreline.
- The water quality improvement projects will re-establish wetland habitat diversity directly adjacent to the NFSLR for threatened and endangered species and species of special concern.

The Proprietary Mitigation Plan is compatible with the goals associated with the Indian River Lagoon (IRL) Surface Water Improvement and Management (SWIM) Plan / Northfork Floodplain Restoration Plan,¹⁵ the St. Lucie County Comprehensive Plan, and the IRL Comprehensive Management Plan by restoring wetland and floodplain functions along the NFSLR floodplain. As a result of avoidance and minimization measures and through the development of the Proprietary Mitigation Plan, all possible planning has been conducted to minimize the use of Section 4(f) resources.

7.3.4 Wetlands, Wildlife Habitat, and Essential Fish Habitat

Throughout the project development process and as documented in the EIS, the City has evaluated the project through a sequence of avoidance, minimization, and then, compensation for unavoidable impacts, in accordance with mitigation requirements for wetland impacts pursuant to the Clean Water Act Section 404(b)(1) Guidelines (40 CFR, Part 230), USACE Regulations (33 CFR, Part 332), and associated guidance. As described in Section 3.1 (Project History), in 1994, the City sold land adjacent to the NFSLR to the FDEP to prevent its development, but with the anticipation of being allowed to construct a future crossing of the NFSLR along the West Virginia Drive corridor. In 1999, the City Council passed a resolution supporting the need for the corridor and instructed City staff to pursue an easement across the now state-owned land to complete the river crossing project. This involved coordination with the regulatory agencies and the FDOT. Ultimately, this led to the programming of FDOT funds in its Work Program to complete this EIS study.

During the ETDM process for the EIS, the USFWS assigned a degree of effect of "Dispute Resolution" for the categories of Special Designations, Wetlands, and Wildlife and Habitat. Subsequently, the Secretary of the FDEP suggested the City initiate a Conceptual Environmental Resource Permit (Conceptual ERP) concurrently with the EIS process. The purpose of the Conceptual ERP was to provide resource agencies with technical data and analysis necessary to evaluate the project. To secure an easement to cross state-owned lands and to resolve the dispute resolution, the City pursued an ambitious comprehensive mitigation plan that included a number of mitigation projects within the NFSLR watershed that were developed specifically for this project. This included a Proprietary Mitigation Plan [Section 7.3.3 (Section 4(f) Resources)] and a Regulatory¹⁶ Mitigation Plan that is described in this section. The Proprietary Mitigation Plan provides compensatory mitigation for obtaining an easement to cross state-owned lands and resulted in the resolution of the dispute.¹⁷ The Regulatory Mitigation Plan provides compensatory mitigation for unavoidable direct and indirect impacts to wetlands (same as essential fish habitat), SSL, and navigable and non-navigable waters, as required under federal and state regulations.

¹⁵ Email from USACE, dated August 2, 2012 (**Appendix A**).

¹⁶ "Regulatory" refers to a type of governmental power, which allows an entity of the government to regulate private property as well as publicly-owned lands for the public good. The regulatory powers that the government agency has over private and public lands are granted by the state and by federal statutes and regulations.

¹⁷ Email from USFWS, dated November 28, 2012 (**Appendix A**).

7.3.4.1 Details of the Regulatory Mitigation Plan

The City coordinated with the SFWMD and USACE to develop the Regulatory Mitigation Plan. The NMFS and the USFWS were also consulted during this process. For the purposes of the Conceptual ERP, a “representative alternative” was developed that included the highest impacts for each resource from all build alternatives. However, the Preferred Alternative will have fewer impacts (in acres and functional losses) than the representative alternative. The Regulatory Mitigation Plan consists of using the Platt’s Creek Compensatory Mitigation Site (Platt’s Creek), which is being developed specifically for this project to provide compensatory mitigation for wetland impacts and the purchase of credits at the Bear Point Mitigation Bank to provide compensatory mitigation for mangrove impacts.

The 98-acre Platt’s Creek site is owned by St. Lucie County and is a fallow citrus grove (**Figure 7.2**). The site is located within the NFSLR drainage basin (the Preferred Alternative is located within the same basin). The site borders the NFSLR to the west, state-owned property to the south, and residential and commercial land uses to the north and east. The County obtained a permit in 2000 as a mitigation bank from the SFWMD; a permit application for the mitigation bank was also submitted to USACE but a permit was not issued. A 19.6-acre wet detention area was designed and constructed to treat upstream stormwater runoff from approximately 1,110 acres of the Platt’s Creek Watershed and the treated runoff will be discharged to the mitigation areas to hydrate the wetlands. After the SFWMD permit was issued, the County could not obtain the funding to construct the wetlands, although funding was available to construct the detention pond.

The City and County entered into a Memorandum of Agreement (MOA) on July 27, 2010 to develop the Platt’s Creek site as a Permittee Responsible Offsite Mitigation Area (PROMA). Platt’s Creek has been permitted by the SFWMD (Permit Number 56-03199-P) and by the USACE [Permit Number SAJ-1998-06236 (IP-GGL)]. The City and County (the property owner) are co-permittees for the SFWMD and USACE permits. The MOA is valid for all build alternatives, including the Preferred Alternative (**Appendix L**). Construction of the mitigation area, planting, and submittal of as-built drawings will be the responsibility of the City. Operation, monitoring, and long-term maintenance will be the responsibility of the County. The City will contribute up to \$2.0 million to construct the mitigation area. The County will then maintain the site in perpetuity. The City will use approximately half of the available functional gain units (as determined by UMAM) as mitigation for the Preferred Alternative, while the County will use the remaining units for future County projects requiring mitigation. The USACE and SFWMD have agreed to this proposal.¹⁸ As a permit condition, the entire mitigation area will be protected under a conservation easement dedicated to the SFWMD, which will be recorded prior to the commencement of construction of Platt’s Creek. The State Historic Preservation Officer (SHPO) has determined that no significant archaeological or historic resources are recorded within the mitigation area and that the project is unlikely to have an effect on such resources.¹⁹ The County purchased the site with County conservation funds so that Section 6(f) does not apply²⁰.

¹⁸ Agreements are contained in the Platt’s Creek Mitigation Plan (**Appendix M**).

¹⁹ Letter from SHPO, dated November 10, 2011, **Appendix M**.

²⁰ Lands purchased with Land and Water Conservation Fund Act funding are subject to the provisions of Section 6(f) [Section 6.0 (Section 4(f) Evaluation)]



FM No. 410844-1-28-01
 FP No. 7777-087-A
 ETDM No. 8247

Crosstown Parkway Extension PD&E Study and
 Environmental Impact Statement
Platt's Creek Compensatory Mitigation Site
 Figure 7.2

Platt's Creek will consist of 62.99 acres of restored/created wetland (49.34 acres) and upland habitat (13.65 acres) within the fallow citrus grove. The 19.6-acre wet detention system will provide treated stormwater to the new mitigation area, as designed. The specific habitat types to be created are: 13.54 acres of hydric hammock, 23.1 acres of depression marsh, and 12.7 acres of floodplain swamp. In addition, two mesic flatwoods areas totaling 13.65 acres will be created as a buffer between the mitigation site and the stormwater facility, development to the north, and Sunrise Boulevard. The project will result in 24.02 functional gain units (USACE) and 22.30 functional gain units (SFWMD), as determined by UMAM. The difference in functional gain units is due to the difference in time lag estimates by the two agencies. Details of the USACE 12-point mitigation plan²¹ are contained in **Appendix M**, including a description of baseline conditions, engineering drawings, planting plan, determination of functional gain units, success criteria, financial assurances, adaptive management actions, a monitoring plan, and short-and long-term maintenance plan.

Total wetland functional loss due to the Preferred Alternative is 8.34 functional loss units, including indirect functional loss, and impacts to mangroves. Of the total credits at Platt's Creek, 11.25 functional gain units²² will be allocated as compensatory mitigation for regulatory wetland impacts for the Crosstown Parkway Extension project. Both the SFWMD²³ and the USACE²⁴ have stated that this allocation will satisfy the regulatory component for any of the build alternatives, including the Preferred Alternative. The remaining functional gain units are reserved for future County projects.

Platt's Creek will be used to offset impacts to the wood stork Core Foraging Area (CFA) associated with the Preferred Alternative. A wood stork biomass calculation was completed to ensure the Platt's Creek site adequately mitigates for unavoidable impacts to CFA (**Appendix M**). Of the total wetlands to be created, Platt's Creek will provide 13.45 acres of short-hydroperiod wetlands (inundated less than 180 days per year) and 15.6 acres of long-hydroperiod wetlands (inundated more than 180 days per year), providing 11.04 kilograms (kg) and 55.15 kg of wood stork forage, respectively. The remaining wood stork forage at Platt's Creek is reserved for future County projects. The USFWS has determined that the proposed wood stork mitigation will offset the loss of wood stork forage resulting from the project.²⁵

The Preferred Alternative will have unavoidable impacts to 0.19 acres of mangrove habitat, resulting in 0.22 functional loss units. However, under the "worst case" approach, the highest impacts to mangroves are due to Alternative 2A/2D, which resulted in a total functional loss of 0.34 units.²⁶ Therefore, as agreed for this project, the City will purchase 0.5 credits at the Bear Point Mitigation Bank (the freshwater wetland mitigation project at Platt's Creek will not be able to restore/create mangrove habitat). The mitigation credit

²¹ Platt's Creek Mitigation Plan (**Appendix M**); contains the elements required for a compensatory mitigation projects, as described in CFR 33 Part 332.4(c)(2) – (14).

²² The functional loss calculations contained in **Appendix M** are those contained in the Conceptual Environmental Resource Permit (ERP) Application. The Conceptual ERP Application assumed a "worst case" scenario, which combined the highest amount of impact from all build alternatives. After the width of the bridge was reduced, the actual functional loss due to the Preferred Alternative (8.34 acres) is less than those calculated for the Conceptual ERP Application (11.25 acres). These acreage differences will also appear in UMAM calculations for the Conceptual ERP Application.

²³ Letter from SFWMD to the City of Port St. Lucie, dated June 9, 2010 (**Appendix M**).

²⁴ Letter from USACE to the City of Port St. Lucie, dated June 8, 2010 (**Appendix M**).

²⁵ Letter from USFWS, dated October 15, 2012 (**Appendix A**).

²⁶ The mitigation requirements for the Regulatory Mitigation Plans calculated through UMAM and E-WRAP were based on the "worst case" representative alternative that assumed the worst case for each resource category. Thus, the acres, functional losses, and functional gains will be larger than those discussed in this EIS.

requirements at the Bear Point Mitigation Bank have been in accordance with E-WRAP (Bear Point Mitigation Bank evaluation method). In addition, a Proximity Factor Worksheet was completed for the USACE because the Bear Point Mitigation Bank is outside of the service area for the bank (**Appendix M**). The USACE and the SFWMD have stated that the amount of credits is appropriate mitigation for mangrove losses.²⁷ The City has paid a reservation fee for the purchase of 0.5 credits and the balance will be paid in full when the Record of Decision is signed.²⁸

7.3.4.2 Benefits of the Regulatory Mitigation Plan

Platt's Creek was developed for the Preferred Alternative. It will improve the wildlife elements, vegetation, water quality, and hydrological conditions of the local watershed by transforming a former citrus grove into a viable wetland system. Currently, the site provides minimal wildlife utilization because the abandoned citrus grove has been invaded by dense stands of Brazilian pepper. The establishment of native vegetative communities will provide support for numerous wildlife species that typically inhabit the AP and the SPSP, including federal and state listed species. Platt's Creek is located adjacent to the NFSLR (less than one mile north of the boundary of the AP) and the SPSP. The project will create habitat that supports and will attract numerous wildlife guilds that currently exist within the AP.

Over 50 species of birds have been documented in the AP, including migratory, wading and songbirds. The created forested wetlands (Hydric Hammock and Floodplain Swamp) will establish approximately 26.24 additional acres, which will provide habitat for the following listed species:

- Southeastern American kestrel (*Falco sparverius paulus*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Osprey (*Pandion haliaetus*)
- Wood stork (*Mycteria americana*)
- American alligator (*Alligator mississippiensis*)
- Eastern indigo snake (*Drymarchon corais couperi*)

The created Depression Marsh system will provide approximately 23.10 additional acres of habitat support for the following listed species:

- Florida sandhill crane (*Grus canadensis pratensis*)
- Limpkin (*Aramus guarauna*)
- Little blue heron (*Egretta caerulea*)
- Roseate spoonbill (*Ajaia ajaja*)
- Snail kite (*Rostrhamus sociabilis plumbeus*)
- Snowy egret (*Egretta thula*)
- Tricolored heron (*Egretta tricolor*)
- White ibis (*Eudocimus albus*)
- Wood stork (*Mycteria americana*)
- American alligator (*Alligator mississippiensis*)

When completed, Platt's Creek will:

²⁷ Meeting minutes, dated September 21, 2010 and issued September 22, 2010 (**Appendix M**).

²⁸ Mitigation Bank Credit Reservation Agreement, dated May 3, 2011 (**Appendix M**).

- Provide compensatory mitigation for the Preferred Alternative;
- Provide compensatory mitigation for impacts to foraging habitat for the endangered wood stork for unavoidable habitat losses;
- Re-establish wetland and upland habitat diversity directly adjacent to the NFSLR and Platt's Creek;
- Provide wetland habitat coverage for threatened and endangered species and species of special concern;
- Establish feeding, breeding and nursery habitat for fish in the NFSLR;
- Restore the hydroperiod and re-vegetation of a portion of the NFSLR floodplain;
- Restore natural storage and water purifying functions of a portion of the NFSLR floodplain;
- Further the overall objectives for water management in the watershed region;
- Construct a long term watershed-based restoration project that increases aquatic resource functions and services;
- Improve water quality within the 1,110-acre watershed and specifically within the NFSLR;
- Preclude development of the property, which is directly adjacent to the NFSLR; and
- Provide potential for future passive recreational opportunities.

Implementation of the Regulatory Mitigation Plan will further the goals associated with the Indian River Lagoon (IRL) Surface Water Improvement and Management (SWIM) Plan, St. Lucie County Comprehensive Plan, the IRL Comprehensive Management Plan, and the USACE Northfork Floodplain Restoration Plan by eliminating agriculture runoff from the Platt's Creek watershed, attenuating flow, restoring wetland and upland habitat, and restoring natural storage and water purifying functions along the river's floodplain. The restoration of Platt's Creek plays an integral part in enhancing the ecological value of the NFSLR and provides mitigation that offsets unavoidable wetland impacts in a manner that provides ecological benefits to the region.

7.3.4.3 Summary of the Compensatory Mitigation Plan for Wetlands, Wildlife Habitat, and Essential Fish Habitat

The Regulatory Mitigation Plan has been developed in conjunction with the regulatory agencies and in accordance with UMAM and E-WRAP (Bear Point Mitigation Bank), which calculated the functional gains of the mitigation plans and balanced those gains with the functional losses of the Preferred Alternative. All regulatory agencies have approved the plan as adequate to compensate for unavoidable impacts due to the Preferred Alternative. After the Record of Decision has been signed, Platt's Creek will be completed.